REMARKS

Claims 1 to 8 are pending in the application.

Prior Art Rejection

In the Office Action, the Examiner has rejected claims 1-8 under 35 U.S.C. § 103(a) as being unpatentable over a technical article by Leadbeater et al. (*Tetrahedron*; 55; 11889-11894 (1999); "Leadbeater"). The Examiner argues that the present claims are directed to a method for producing a coupling compound by reacting an organic halogen compound with an organic boron compound in the presence of a catalyst comprising a nickel compound and a dipyridyl compound of formula (i) or a phenanthroline compound of formula (ii). The Examiner argues that Leadbeater teaches a process for producing a coupling compound by a Suzuki coupling reaction, in which an aromatic halogen compound is reacted with phenylboronic acid in the presence of nickel and a bipyridyl compound.

The Examiner acknowledges that Leadbeater does not teach a substituted (i.e., alkyl-substituted bipyridyl compound) or a phenanthroline compound being employed. However, the Examiner concludes that one skilled in the art at the time of the invention would reasonably expect a substituted bipyridyl compound or a fused pyridyl ring system, such as a phenantholine system, to react with the nickel salt that is employed by Leadbeater, thus forming the corresponding nickel complex and catalyzing the coupling reaction. Applicants respectfully traverse this rejection as follows.

The presently claimed invention is directed to a method for producing a coupling compund of formula (1) by reacting an organic halogen compound of formula (2) with an organic boron compound of formula (3) in the presence of a catalyst comprising a nickel compound and a compound of formula (i) having a bipyridyl skeleton or a compound of formula (ii) having a phenanthroline skeleton. The organic halogen compound of formula (2) contains a bromine or iodine atom bonded to a substituted or unsubstituted linear, branched, or cyclic hydrocarbon group such that the halogen atom is bonded to sp^3 carbon atoms at the α and β positions. For example, as described in the present application at page 10, lines 2-23, appropriate R^1 moieties include substituted and unsubstituted C_2-C_{30} alkyl groups and substituted and unsubstituted C_4-C_{30} alkenyl groups.

In contrast, Leadbeater discloses a process for producing a coupling compound by the

Suzuki aryl coupling reaction, in which an aromatic halogen compound (aryl halide) is reacted with phenylboronic acid in the presence of a phosphine-free nickel complex, $NiCl_2(NEt_3)_2$ or $NiCl_2$(bipy). As shown in Table 3 of Leadbeater, a variety of aryl halide compounds may be used as the reactants for coupling with phenylboronic acid to produce biaryl compounds. However, Leadbeater only describes the reaction of aryl halides, compounds in which the halogen atom is bonded to a benzene ring. The halogen atoms in aryl halide compounds are thus always bonded to sp^2 carbon atoms. That is, since Leadbeater is directed to aryl coupling reactions, Leadbeater does not teach or suggest reaction of phenylboronic acid with a linear, branched, or cyclic hydrocarbon compound in which the halide is bonded to sp^3 carbons at the α and β positions. Accordingly, Leadbeater does not teach or suggest all of the claimed elements, and reconsideration and withdrawal of the § 103(a) rejection based on Leadbeater are respectfully requested.

Double Patenting Rejection

The Examiner has also rejected claims 1-8 on the grounds of obviousness-type double patenting as being unpatentable over claims 1, 2, 8, 9, 13, and 16-18 of U.S. Patent No. 7,041,856. The Examiner argues that while the conflicting claims are not identical, they only differ as a matter of breath. The Examiner contends that the process claimed in the '856 patent is broader than in the present claims but encompasses the process (reactants, catalysts, etc.) of the present claims. Applicants respectfully traverse this rejection as follows.

Despite the Examiner's assertion to the contrary, the reactants recited in the present claims and in the claims of the '856 patent are not the same and do not encompass one another. Rather, in the present claims, X^1 in formula (2) is bonded to an sp^3 carbon atom, as previously described. In contrast, claim 1 of the '856 patent recites that X^1 is bonded to an sp^2 carbon atom. It would not have been obvious based on the '856 patent to utilize a compound having formula (2) in which X^1 is bonded to an sp^3 carbon atom as claimed. Accordingly, it is respectfully submitted that the pending claims would not have been obvious over the claims of the '856 patent, and reconsideration and withdrawal of the double patenting rejection are respectfully requested.

In view of the preceding Remarks, it is respectfully submitted that the pending claims are patentably distinct from the prior art of record and in condition for allowance. A Notice of Allowance is respectfully requested.

Respectfully submitted,

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February 22, 2007 By: _____
(Date)

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Enclosure – Petition for Extension of Time (two months)